

**What is Claimed is:**

1. A stereoscopic projection system, comprising:

a first channel first stage imager and a second channel first stage imager, each configured to modulate polarized light input on a pixel-by-pixel basis proportional to gray scale values provided to each pixel of the imager, rotate the polarization of the light and reflect a matrix of modulated light pixels;

a first channel second stage imager and a second channel second stage imager, each configured to modulate a matrix of modulated pixels of light on a pixel-by-pixel basis proportional to gray scale values provided to each pixel of the imager, rotate the polarization of the light and reflect a matrix of twice modulated light pixels;

a relay lens system configured to focus the matrices of modulated light pixels from the first stage imagers on a pixel-by-pixel basis onto the corresponding pixels of the second stage imagers;

a first polarizing beam splitter configured to polarize light input into oppositely polarized light inputs, direct the oppositely polarized light inputs onto the first channel first stage imager and the second channel first stage imager respectively, and direct the matrices of modulated light pixels from the a first channel first stage imager and a second channel first stage imager into the relay lens system; and

a second polarizing beam splitter configured to direct the oppositely polarized matrices of modulated light pixels from the first channel first stage imager and second channel first stage imager onto the first channel second stage imager and the second channel second stage imager respectively, and direct the matrices of twice modulated light pixels from the second stage imagers into a projection lens system.

2. The stereoscopic projection system of claim 1 wherein the first channel imagers and the second channel imagers are addressed with the same signal to enhance the brightness and contrast of the stereoscopic projection system.

3. The stereoscopic projection system of claim 1 wherein the first channel  
5 imagers are addressed with the video signal intended for a first eye of a viewer and the second channel imagers are addressed with the video signal intended for a second eye of the viewer to provide a three dimensional image.

4. The stereoscopic projection system of claim 3 further comprising oppositely polarizing lenses configured for viewing the images from the first channel and the second  
10 channel.

5. The stereoscopic projection system of claim 1 wherein the relay lens system comprises a double-gauss relay lens set.

6. A stereoscopic projection system, comprising:  
a first channel, having a first stage LCOS imager and a second stage LCOS imager;  
15 second channel having a first stage LCOS imager and a second stage LCOS imager;  
a first polarizing beam splitter configured to direct light of a first polarization onto the first channel first stage LCOS imager and direct light of a second polarization, opposite the first polarization, onto the second channel first stage LCOS imager; and  
a second polarizing beam splitter configured to direct light of the second polarization  
20 onto the first channel second stage LCOS imager and direct light of the first polarization onto the second channel second stage LCOS imager.

7. The stereoscopic projection system of claim 6 wherein the first channel LCOS imagers and the second channel LCOS imagers are addressed with the same video signals to project a common image with enhanced light intensity.

8. The stereoscopic projection system of claim 6 wherein the first channel LCOS imagers and the second channel LCOS imagers are addressed with different video signals to provide stereoscopic viewing.

9. The stereoscopic projection system of claim 6 further comprising a relay lens system that directs the output of both the first stage LCOS imagers onto the second stage LCOS imagers on a pixel-by-pixel basis.

10. The stereoscopic projection system of claim 9 wherein the relay lens system comprises a double-gauss relay lens set.

11. The stereoscopic projection system of claim 9 further comprising a projection lens for projecting both the first channel image and the second channel image onto a viewing screen.

12. The stereoscopic projection system of claim 11 further comprising an illumination system providing random polarity light to the first polarizing beam splitter.